

DDT, DDE, and DDD

DDT (dichlorodiphenyltrichloroethane) is a white, solid chemical with no odor or taste. It has been used around the world for many years to kill pests, especially insects. DDT products were widely used because they were relatively inexpensive and highly effective at killing pests. It has been illegal to use DDT in the United States since 1972 when scientific research found it to be harmful to wildlife.

Before banning in 1972, DDT products were commonly used by US farmers to kill unwanted insects on crops and by homeowners and businesses to kill insects. The Navy also used DDT products in the past to kill unwanted insects or pests on our installations and onboard ships.

DDT products are still used in some countries, especially in poorer countries that need an inexpensive and effective pesticide to kill insects that carry dangerous diseases such as malaria.

What are DDE and DDD?

DDE (dichlorodiphenyldichloroethylene) and DDE (dichlorodiphenyldichloroethane) are chemicals similar to DDT that are found in small quantities in most DDT products. DDE has no commercial use. DDD was also used to kill insects, but its use as a pesticide has also been banned in the U.S. One form of DDD has been used by doctors to treat cancer of the adrenal gland.

What happens to DDT, DDE, and DDD in the environment?

DDT, DDE, and DDD entered the environment in the U.S. when DDT products were sprayed on crops or used in homes offices, and other locations to kill unwanted pests.

These compounds also entered the environment years ago when waste pesticides were discarded in landfills. They still enter the environment from the current use of DDT products in other countries.

DDT will break down into DDD and DDE in the environment. It is broken down quickly in the air by sunlight. Typically half of what's in the air will break down within 2 days.

DDT does not break down as quickly in soil. It sticks strongly to soil and is broken down slowly to DDD and DDE by microorganisms in the soil. Depending on the type of soil, half of the DDT will break down in 2 to 15 years.

Only a small amount of DDT, DDD, or DDE will go through the soil into groundwater because the compounds do not dissolve easily in water.

DDT, and especially DDE, cause problems in the environment because these chemicals build up in plants and in fatty tissues of fish, birds, and other animals.





How are people exposed to DDT, DDE, and DDD?

Because of the widespread use of DDT pesticides years ago, most people are exposed to small amounts of DDT, DDE, and DDD everyday in the foods they eat.

Foods such as leafy vegetables, root vegetables (like carrots and potatoes), and fatty meat, fish, and poultry tend to contain more DDT, DDE, and DDD – but the levels are typically very low. Imported foods from countries that still allow use of DDT to control pests are more likely to contain higher amounts of the pesticide components.

People who live near waste sites or landfills that contain DDT products may be exposed to higher amounts of DDT, DDE, and DDD. They might be exposed to these chemicals in the air they breathe, the water they drink, and possibly by breathing or swallowing contaminated soil particles.

DDT, DDE, and DDD have been found in human breast milk. Infants who are breast fed might be consuming these chemicals if their mothers have been exposed.

Can DDT, DDE, or DDD affect my health?

The United States EPA has listed DDT, DDE, and DDD as probable human carcinogens. The word probable means that there are not any studies in humans that have shown increases in cancer rates, but there are animal studies that have shown these chemicals can cause cancer.

High levels of DDT can affect the nervous system. People who accidentally swallowed large amounts of DDT became excitable and had tremors and seizures.

These effects went away after the exposure stopped. No effects were seen in people who took small daily doses of DDT by capsule for 18 months.

A study in humans showed that women who had high amounts of DDE in their breast milk were unable to breast feed their babies for as long as women who had little DDE in their milk. Another study in humans showed that women who had high amounts of DDE in their breast milk had an increased chance of having premature babies.

How can I prevent exposure to DDT, DDE, and DDD?

Most families will be exposed to DDT by eating foods or drinking liquids contaminated with small amounts of DDT. The following can help reduce this exposure:

- Cook all fish to reduce the amount of DDT;
- Wash fruits and vegetables to remove most DDT from their surface; and
- Follow any local health advisories that tell you about eating fish and wildlife from contaminated areas.

For more information:

If you have questions regarding the information in this fact sheet, please contact the Navy and Marine Corps Public Health Center, Environmental Programs Directorate at (757) 953-0932. Additional web resources are available at the following links:

U. S. Environmental Protection Agency
<http://www.epa.gov/opptintr/pbt/ddt.htm>

Centers for Disease Control and Prevention
<http://www.atsdr.cdc.gov/tfacts35.html>
<http://www.atsdr.cdc.gov/toxprofiles/phs35.html>
<http://www.atsdr.cdc.gov/toxprofiles/tp35.html>